

FIR Filter

Overview

The FIR Filter component allows you to easily implement FIR filters with different number of taps.

Description

Normally, the FIR filter coefficients are created in another tool such as Matlab and then imported into the GDE using a file formatted for a specific number of taps. The FIR filter component supports 16-, 32-, 48-, 64-, 80-, 96-, 112- and 128-tap FIR filters. You can create filters from 1 to 128 taps by simply setting the unused tap coefficients to 0.0. For example, if you desired to create a 58-tap FIR filter, then the coefficients can be calculated in Matlab with 58 coefficients. Following this, a 64-tap FIR can be created in the GDE. A file is then created with the 58 coefficients (in DAP short format, non-scientific notation) and 6 coefficients set to 0.0.

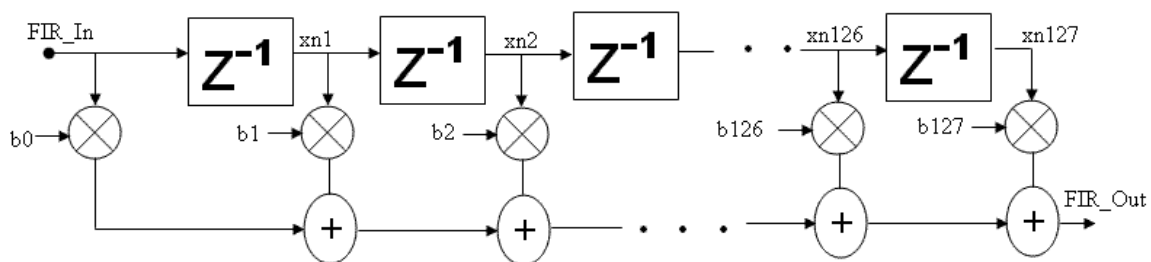
The FIR Filter component supports structure of 16 taps to 128 taps in multiples of 16.

Properties

- Taps - number of FIR filter Taps (16, 32, 48, 64, 80, 96, 112, 128)
- Coefficients - $b_0, b_1, \dots, b_{63}, b_{264}, \dots, b_{126}, b_{127}$

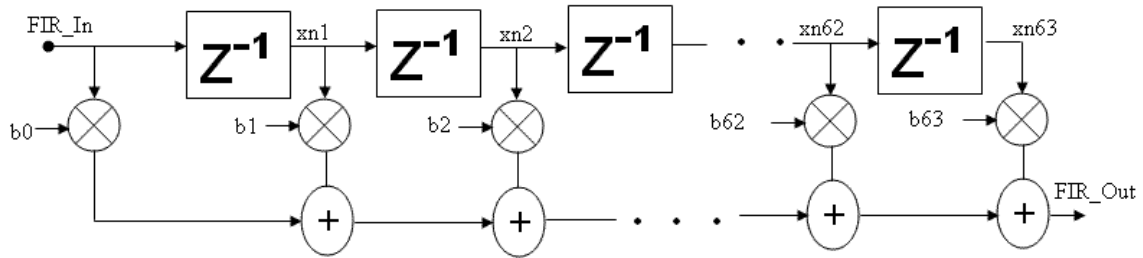
128-Tap FIR

Coefficients: $b_0, b_1, b_2, \dots, b_{126}, b_{127}$.



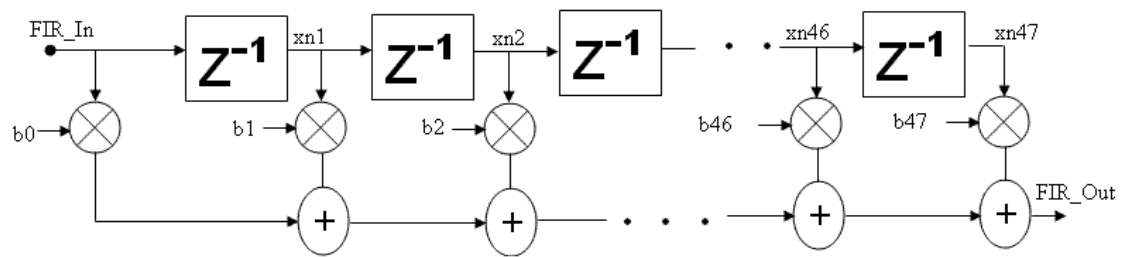
64-Tap FIR

Coefficients: $b_0, b_1, b_2, \dots, b_{62}, b_{63}$.



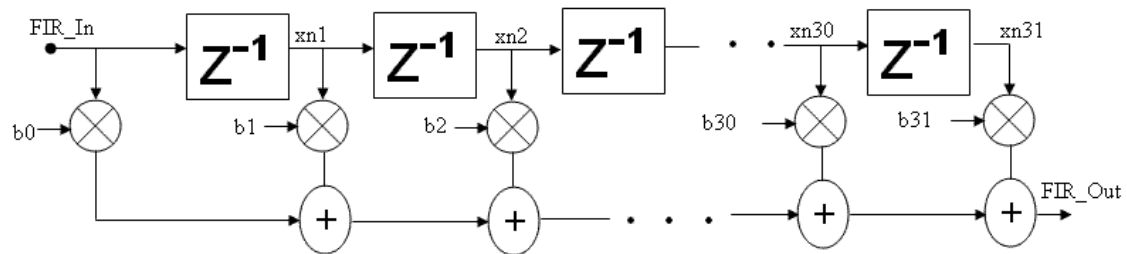
48-Tap FIR

Coefficients: $b_0, b_1, b_2, \dots, b_{46}, b_{47}$.



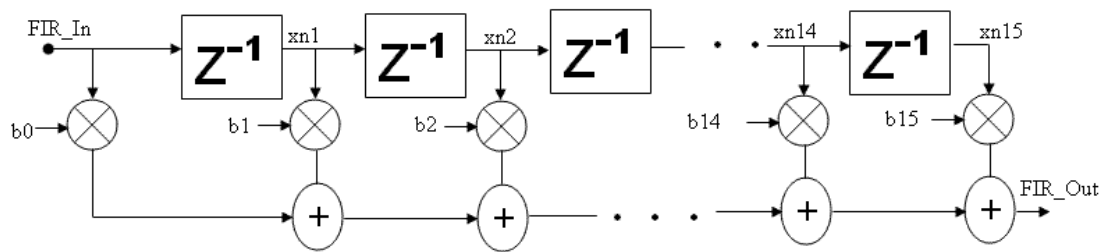
32-Tap FIR

Coefficients: $b_0, b_1, b_2, \dots, b_{30}, b_{31}$.



16-Tap FIR

Coefficients: $b_0, b_1, b_2, \dots, b_{14}, b_{15}$.



Data File Format

The data file format is the same for all structures.

For example, the file format for 16-tap FIR is:

b0

b1

b2

.....

b14

b15

Assume that $b_0 = .053647$, $b_1 = -.27485$, $b_2 = .16497$, $b_{14} = -.0042876$, and $b_{15} = .0037625$. Then the FIR input data file would look like this:

b0 .053647

b1 -.27485

b22 .16497

.....

b14 -.0042876

b15 .0037625

A template for this file can be found at FIR Filter component library.

An example template file for 64 coefficients can be found in the same directory as above.

Configurable Properties

Property	Description
b0 .. b127	FIR filter parameters
Taps	Number of taps in Filter

